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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/041,011	01/07/2002	Takeo Oita	1503.66084	2591

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EXAMINER

SHINGLETON, MICHAEL B

ART UNIT PAPER NUMBER

2817

DATE MAILED: 06/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/041,011	Applicant(s) OITA, TAKEO	
	Examiner michael b. Shingleton	Art Unit 2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Michael B. Shingleton

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4-8, 11, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art as represented by Figures 1 and 2 of the instant application (AAPA) in view of Horn "Basic Electronics Theory" Fourth edition pp 478-487, Storch US 2,980,872, and Benes et al. US 4,817,430 (Benes).

AAPA discloses a synchronous signal generator having a converter that converts a sine wave from a crystal oscillator 1 into a pulse via the pulse converter 2. AAPA fails to show a filter and particularly a crystal AT-cut filter connected to the input of the pulse converter 2 and is equal to the oscillation frequency f and the center frequency being F_0 .

Horn recognizes that a totally harmonic-free sine wave is difficult to achieve (See page 478) and thus Horn teaches that it is desirable to achieve a harmonic-free sine wave. Horn recognizes the problem with oscillators as producing undesirable harmonics.

Figure 6 of Benes addresses this need to provide for a reduced harmonic content in the output of a signal. Benes does this by providing a harmonic filter to filter out at least the third harmonic. See column 7, around lines 39-46.

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided a bandpass filter centered at the sine wave frequency of AAPA and filter out the harmonics so as to achieve a harmonic free signal as taught by the combination of AAPA, Horn and Benes.

Benes, Horn and AAPA are silent on the construction of the bandpass filter. However, Storch in Figure 4 thereof shows one common construction of a bandpass filter. Namely one conventional art recognized equivalent bandpass filter is one that includes a crystal that has an AT cut.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the band pass filter of Horn, Benes and AAPA with one that is a crystal type having at least one AT cut crystal because as the Horn, Benes and AAPA references are silent on the

exact structure of the filter one of ordinary skill in the art would have been motivated to use any art-recognized equivalent filter including one that has a power amplifier such as the one taught by Storch.

Note that the synchronous signal generator of AAPA has an oscillation frequency f that is equal to a frequency of a fundamental wave component output from the crystal oscillator as shown in Figure 2 of the instant application.

Note also that because the same reference number "2" is used to describe the pulse converter because of MPEP 608.02 ("no single reference character is used for two different parts".) these are seen to be identical in structure and thus provides for the "pulse converter is a complementary output driver IC".

Claims 2, 3, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA, Horn, Benes and Storch as applied to claims 1, 4-8, 11, 12 and 13 above, and further in view of Gibilisco "Handbook of Radio & Wireless Technology" pp 195-197.

As to the specifics concerning the same crystal characteristics, the equal cut angle, the same temperature-frequency characteristics that appears in claims 2, 3, 9 and 10 these are all result effective variables used in the design of the crystal filter. For example Gibilisco clearly recognizes that the design criteria of frequency response is determined "mainly by the thickness of the crystal and the angle at which it is cut". Therefore the selection of any of these characteristics is merely the selection of the optimum or workable range for the combination made obvious above and as the selection of the optimum or workable range involves but routine skill in the art, one of ordinary skill in the art would have been motivated to make these selection, i.e. it would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected the same temperature-frequency characteristics, the equal angle cut etc. as these choices are all choices that lie within the skill of one of routine skill in the art.

Applicant's arguments with respect to claims of record have been considered but are moot in view of the new ground(s) of rejection. While the new ground of rejection has been made because of the amendment adding that the filter be one of an AT cut crystal type, the following remarks are given. It is well established that it is what the references teach as a whole. AAPA teaches the basic synchronous signal generator structure that has within the structure thereof a pulse converter 2 that converts a sine wave into a pulse of rectangular form. Since the pulse converter of AAPA desires that the input be a sine wave it would just be common sense that the sine wave generator generate a wave as close as possible to

an ideal sine wave. Horn in combination teaches that most generators or oscillators will not produce a harmonic-free sine wave. Applicant is critical of Bene but it is what Bene teaches and that is a filter for "filtering out" at least one harmonic. A signal that is produced at the output of the filter would be one that would not have the harmonic. Thus it is just common sense that given the sine wave source of AAPA would not be ideal, and one would naturally desire as close to an ideal sine wave as possible, the natural way to achieve this is to filter out the wanted signals, i.e. filter out the harmonics. Bene teaches that harmonic filters are out there an known to filter out harmonic(s), Horn teaches that it is desirable to have an oscillator without harmonics. The solution when one of ordinary skill views the references taken together is to filter out the harmonics in any device that employs an oscillator or sine wave generator where the sine wave is desired. In the instant case the harmonics can do nothing but interfere with the generation of a pulse generation from a device that is designed to convert a sine wave to a pulse. For example since the harmonics has a higher frequency the pulse converter may try to form a pulse that is based on that frequency. The pulse converter may actually form a pulse based on that harmonic frequency but may be of lesser amplitude than the pulse formed at the fundamental. This would just be common engineering sense.

The examiner disagrees with applicant's assessment that the Examiner has not established a desirability to make the proposed combination. As stated above achieving an oscillator or sine wave form generator that is harmonic free is desirable and known to be desirable. Filters are known to filter out undesirable frequencies from a signal. Bene is just one example of the use of a filter to filter out harmonics from a signal. As pointed out above the examiner believes that the references when taken together points out not only the desirability to utilize a filter to ensure that the harmonics of a signal source are filtered out but actually shows the use of a filter to filter out the undesired harmonics. The rejection was repeated for the examiner still sees that the concept claimed is taught by the prior art. The examiner has had to add a new reference to Storch that shows that one common construction of a bandpass filter is that of a crystal structure where the crystals are AT-cut. See Figure 4.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael B. Shingleton whose telephone number is (571)272-1770. The examiner can normally be reached on Tues-Fri from 8:30 to 4:30. The examiner can also be reached on alternate Fridays. The examiner normally has second Mondays of the bi-week off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal, can be reached on (571)272-1769. The fax phone number for the organization where this

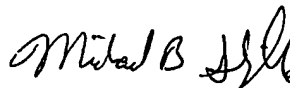
Art Unit: 2817

application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MBS

May 30, 2005



Michael B Shingleton
Primary Examiner
Group Art Unit 2817